formula of S. von Kostanecki and V. Lampe, although the latter formula accords better with the chemical behaviour of catechin.

Royal Irish Academy, January 24.—Rev. J. P. Mahaffy, president, in the chair.—Prof. J. A. **McClelland** and Rev. R. **FitzGerald**: The photo-electric properties of leaves. The paper deals with the photo-electric power of leaves and gives numbers for leaves of various types. It also deals with the extraction of chlorophyll from leaves and the activity of the solutions thus obtained. It is also shown that distilled water in which leaves have been immersed has considerable photo-electric activity. The concluding portion of the paper deals with the increase of photo-electric power produced by the action of oxidising agents on the water extracts and on certain organic substances.

PARIS.

Academy of Sciences, January 17.—M. Camille Jordan in the chair.—Gaston **Darboux**: An extension of Poncelet's theorems relating to polygons inscribed or circumscribed about conics.—Armand **Gautier** and Paul **Clausmann**: Fluorine in the vegetable kingdom. A table is given of the quantities of fluorine and phosphorus in various parts of the plant. In the choice of material special attention has been paid to substances utilised as food for men and animals. In plants the leaves are the organs richest in fluorine, the smallest quantities being present in stem, wood, and bark. The ratio of phosphorus to fluorine in the different organs of the plant follows no simple relation, but, as in animals, the two elements increase and decrease together.—Henri **Douvillé**: The Cosmoceratideæ; the history of a family of Ammonites, from a posthumous memoir of Robert Douvillé.—Ch. **Platrier**: The solutions of certain linear integral equations of the third species considered as limits of equations of the second species.—M. **Angelesco**: A class of polynomials with a single variable.—J. **Priwaloff**: The convergence of conjugate trigonometrical series.—Amé **Pictet** and Tsan Quo **Chou**: The formation of pyridine and *iso*quinoline bases starting from casein. Casein was hydrolysed by hydrochloric acid in presence of formaldehyde (added gradually as methylal), the product dried and distilled with lime. The mixture of bases obtained, amounting to 9 per cent. of the original casein, was freed from primary and secondary bases by treatment with sodium nitrite. From the residual tertiary bases pyridine, *iso*quinoline, and homologues of these were isolated. None of these bases were obtained if formaldehyde is not present during the hydrolysis of the casein.—S. **Reich**: The nitration of phenylpropiolic acid. Under suitable conditions *para-* and *ortho-*nitrophenylpropiolic acids can be obtained by direct nitration. No *meta* acid could be isolated.—G. **Friedel**: The observations of Hoga and Jaeger relating to certain lack of symmetry of crystal radiograms. A discussion of the possibility of these results being due to a slight imperfection in the orientation of the crystal plate. An error of 1° or 2° would suffice to produce all the phenomena described.—G. **André**: The displacement of potash and phosphoric acid contained in certain rocks by some substances employed as manures. Finely powdered minerals containing potash yield appreciable amounts of potash to water alone, and this amount is markedly increased if certain substances present in manures are added. Chalk, salt, and calcium sulphate produce about the same effect; sodium nitrate, and especially ammonium sulphate, cause larger amounts of potash to go into solution. The results of similar experiments on the extraction of soluble phosphate from apatite are also given.—H. **Bouygves**: The culture of the sugar-beet in the south-west of France. The yield per hectare has been found to be somewhat larger in the south (Lot, Lot-et-Garonne, Gironde, and Dordogne) than in the north, and the yield of sugar is not inferior.—M. **Bassuet**: The treatment of old wounds arising from the war. A contribution to the discussion of the hypothesis of micro-organisms remaining latent in old, and apparently healed, wounds. On treating open wounds of long standing by a polyvalent serum, either by injection or by simple local dressings, many cases have been observed of the formation of an abscess rich in pus at a distance from the point of injection or treated wound; but always forming under the scar of an old healed wound. Frequently (thirty-one cases out of forty-nine) fragments of clothes, splinters of bone, pieces of projectile, and, in one case, a drainage tube 7 cm. long, have been eliminated by the abscess. The local cure takes place rapidly, and coincides with a marked improvement in the general state of the patient. Out of 421 cases, after treatment without being cured during periods of eight to fourteeen months in various hospitals, 282 have been discharged cured.—L. G. **Seurat**: The morphology and phylogeny of the Acuaridæ.

CALCUTTA.

Asiatic Society of Bengal, January 5.—W. H. **Phelps**: Some Calcutta spiders. Among the points dealt with were:—*Cyrtophora citricola*: Their individuality, variety of characteristics, individual markings, industry and skill, elaborate snares, adaptability to artificial light, notwithstanding their home is in the garden or the jungle, nesting and snare building, aviating, skin casting, etc. *Spariolenus tigris*: A detailed description was given of nest building, the laying of eggs, the development of the egg into the young spider, with a time-table.—M. S. **Ramaswami**: A new species of Tephrosia from Sind. In this paper a hitherto unknown species of Tephrosia (family Papilionaceæ) with curious falcate or circinnate pods is described in Latin and in English. The distribution of this new plant is Sind and Rajputana. A plate with figures of parts of the plant, including floral dissections, is appended.

BOOKS RECEIVED.

Manuals of Chemical Technology. v., Sulphuric Acid and Sulphur Products. By Dr. G. Martin and Major J. L. Foucar. Pp. viii+77. (London: Crosby Lockwood and Son.) 7*s.* 6*d.* net.

A Text-Book of Geology. By Profs. L. V. Pirsson and C. Schuchert. Part ii., Historical Geology. By Prof. C. Schuchert. Pp. vi+405–1026. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd.) 12*s.* net.

A Meteorological Treatise on the Circulation and Radiation in the Atmospheres of the Earth and of the Sun. By Prof. F. H. Bigelow. Pp. xi+431. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd.) 21*s.* net.

Graphics and Structural Design. By Prof. H. D. Hess. Second edition. Pp. viii+435. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd.) 12*s.* 6*d.* net.

Third Appendix to the Sixth Edition of Dana's System of Mineralogy (completing the Work to 1915). By Prof. W. E. Ford. Pp. xiii+87. (New York: J. Wiley and Sons, Inc.; London: Chapman and Hall, Ltd.) 6*s.* 6*d.* net.

The London Matriculation Directory. January. (London: University Tutorial Press, Ltd.) 1*s.* net.

Annals of the Solar Physics Observatory, Cambridge. Vol. iii., part 1, August. The Solar Rotation in June, 1911, from Spectrographic Observations made with

©1916 Nature Publishing Group

the McClean Solar Instruments. By J. B. Hubrecht. Pp. 77. (Cambridge: At the University Press.) 9*s.* net.

Heaton's Annual. Twelfth Year. Pp. 463. (Toronto: Heaton's Agency.) 5*s.*

Canada. Department of Mines. Geological Survey. Memoir 80. Huron and Wyandot Mythology. By C. M. Barbeau. Pp. xiv+415+xi plates. (Ottawa: Government Printing Bureau.)

The Theory of Abstract Ethics. By T. Whittaker. Pp. viii+126. (Cambridge: At the University Press.) 4*s.* 6*d.* net.

An Introductory Course of Practical Magnetism and Electricity. By Dr. J. R. Ashworth. Third edition. Pp. xvii+96. (London: Whittaker and Co.) 2*s.* net.

The Journal of the Institute of Metals. Vol. xiv., No. 2. Pp. ix+289. (London: Institute of Metals.) 21*s.* net.

Forty-fourth Annual Report of the Local Government Board, 1914–15. Supplement containing the Report of the Medical Officer for 1914–15. Pp. xxxiv+100. (London: H.M.S.O.; Wyman and Sons, Ltd.) 6½*d.*

Proceedings of the Liverpool Geological Society. Cape Memorial Volume: On the Igneous and Pyroclastic Rocks of the Berwyn Hills (North Wales). By the late T. H. Cope. Pp. 115. (Liverpool: C. Tinling and Co., Ltd.)

Ray Society. The British Marine Annelids. Vol. iii., part ii. Plates. Polychæta—Opheliidæ to Ammocharidæ. By Prof. W. C. McIntosh. Plates lxxxviii–cxi. (London: Dulau and Co., Ltd.) 25*s.* net.

Memoirs of the Indian Museum. Vol v., No. 3, December. Fauna of the Chilka Lake. Crustacea Decapoda. By S. Kemp. Pp. 199–325. (Calcutta: Indian Museum.) 9 rupees.

Board of Education. Examinations in Science and Technology, 1915. Examination Papers and Reports of Examiners. Pp. 140. (London: H.M.S.O.; Wyman and Sons, Ltd.) 9*d.*

A Critical Revision of the Genus Eucalyptus. By J. H. Maiden. Vol. iii., part 4. Pp. 63–79. (Sydney: W. A. Gullick.) 2*s.* 6*d.*

DIARY OF SOCIETIES.

THURSDAY, FEBRUARY 10.

ROYAL SOCIETY, at 4.30.—The Theory of the Helmholtz Resonator: Lord Rayleigh.—The Oxyhydrogen Flame Spectrum of Iron: Sir N. Lockyer and H. E. Goodson.—The Consumption of Carbon in the Electric Arc. III. The Anode Loss: W. G. Duffield and M. D. Waller.—Surface Friction. Experiments with Steam and Water in Pipes: C. H. Lander.—The Structure of Broadened Spectrum Lines: T. R. Merton.

ROYAL INSTITUTION, at 3.—Measurement of the Brightness of Stars; Visual and Photographic Magnitudes: Sir F. W. Dyson.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—The Testing of Underground Cables with Continuous Current: O. L. Record.

OPTICAL SOCIETY, at 8.—Optical or Visual Signalling: Dr. W. J. Ettles.

MATHEMATICAL SOCIETY, at 5.30.—(1) Theorems on Straight Lines Intersecting at Right Angles; (2) The Classification of Rational Approximations: J. H. Grace.—Infinite Derivates: Mrs. G. C. Young.—The Bilinear Curvature and other Functions of Independent Directions on a Surface: E. H. Neville.—The Attraction of Equiangular Spirals: Dr. Brodetsky.

FRIDAY, FEBRUARY 11.

ROYAL INSTITUTION, at 5.30.—Egyptian Jewelry: Prof. W. M. Flinders Petrie.

ROYAL ASTRONOMICAL SOCIETY, at 5.—Annual General Meeting.

PHYSICAL SOCIETY, at 5.—A General Bridge Method for Comparing the Mutual Inductance between Two Coils with the Self Inductance of one of them: Prof. C. H. Lees.—An Enclosed Cadmium-Vapour Arc Lamp: Dr. H. J. S. Sand, D.Sc.

MONDAY, FEBRUARY 14.

ROYAL SOCIETY OF ARTS, at 4.30.—Flemish Architecture: Rev. Dr. H. West.

TUESDAY, FEBRUARY 15.

ROYAL INSTITUTION, at 3.—Nerve Tone and Posture: Prof. C. S. Sherrington.

ROYAL STATISTICAL SOCIETY, at 5.15.

INSTITUTION OF PETROLEUM TECHNOLOGISTS, at 8.—Oil Shales, especially those of Dorsetshire: W. Hardy Manfield.

WEDNESDAY FEBRUARY 16.

ROYAL SOCIETY OF ARTS, at 4.30.—Women's Work During and After the War: The Hon. Lady Parsons.

ROYAL MICROSCOPICAL SOCIETY, at 8.—The Progress and Development of Vision and Definition under the Microscope: Messrs. Heron-Allen Earland, and Rousselet.—An Experiment with the Ultra-microscope: J. E. Barnard.

ROYAL METEOROLOGICAL SOCIETY, at 7.30.—The Rainfall of Nigeria and the Gold Coast: C. E. P. Brooks.—South African Coast Temperatures: Dr. J. R. Sutton.

THURSDAY, FEBRUARY 17.

ROYAL SOCIETY, at 4.30.—*Probable Papers:* The Action of Cobra Venom: Prof. A. R. Cushny and S. Yagi.—Gametogenesis and Sex Determination in the Gall-fly, *Neuroterus lenticularis.* III.: L. Doncaster.—The Structure and Development of the Skull and Laryngeal Cartilages of Perameles, with Notes on the Cranial Nerves: Philippa C. Esdaile.—Physiological Investigations with Petiole-Pulvinus Preparation of Mimosa-Pudica: J. C. Bose and S. C. Das.

ROYAL INSTITUTION, at 3.—Variable Stars: Sir F. W. Dyson.

ROYAL GEOGRAPHICAL SOCIETY, at 5.—A Synthetic Method of Determining Geographical Regions: Dr. J. F. Unstead.

INSTITUTION OF ELECTRICAL ENGINEERS, at 8.—Kelvin Lecture: Terrestrial Magnetism: Dr. C. Chree.

ROYAL SOCIETY OF ARTS, at 4.30.—The Saints of Pandharpur: C. A. Kincaid, C.V.O.

LINNEAN SOCIETY, at 5.—John Bartram; the Pioneer American Botanist: Miss C. Herring-Browne.—Acorn Producing Twin Plants: Miss M. Rathbone.—Winter and Summer Coloration of the Ermine, *Putorius ermineus:* E. S. Goodrich.—The Infestation of Bamboos in Tidal Waters by *Balanus amphitrite* and *Teredo navalis* in Tenasserim: E. P. Stebbing.

FRIDAY, FEBRUARY 18.

ROYAL INSTITUTION, at 5.30.—Polarised Light and its Application to Engineering: Prof. E. G. Coker.

INSTITUTION OF MECHANICAL ENGINEERS, at 8.—Annual General Meeting.

CONTENTS.

PAGE

Defects and Remedies 643
Psychology. By Dr. Robert Armstrong-Jones . . . 644
The Energy Changes in Vital Processes. By T. H. M. 646
A Handbook for Wireless Telegraphists 647
Our Bookshelf 648
Letters to the Editor:—
  Latin as a Universal Language.—**Sir Lauder Brunton, Bart., F.R.S.** 649
  Belgian Soldiers in Holland.—**Prof. William Somerville; Prof. Frederick Keeble, F.R.S.** . . . 649
  Germany's Aims and Methods.—**Rev. Dr. A. Irving** 650
  Instruction in Science for Military Purposes.—**Chas. R. Darling** 650
A Land of Dilemma. (*Illustrated.*) **By J. W. G.** . . 651
Optical Instruments and the Ministry of Munitions 652
The South African Sea-Fisheries. By J. J. . . . 653
New Antiseptics 653
Notes 654
Our Astronomical Column:—
  Astronomical Occurrences 659
  Shifts of Wave-lengths 659
  Furnace Spectra of Cobalt and Nickel 659
The Electro-Thermic Smelting of Iron Ores. By Prof. H. C. H. Carpenter 659
Geological Work in Canada. By G. A. J. C. . . . 660
Chemists and Manufacturers. By A. Chaston Chapman 662
Science and British Trade 663
University and Educational Intelligence 665
Societies and Academies 667
Books Received 669
Diary of Societies 670

Editorial and Publishing Offices:
MACMILLAN & CO., LTD.,
ST. MARTIN'S STREET, LONDON, W.C.

Advertisements and business letters to be addressed to the Publishers

Editorial Communications to the Editor.
Telegraphic Address: PHUSIS, LONDON.
Telephone Number: GERRARD 8830.

©1916 Nature Publishing Group